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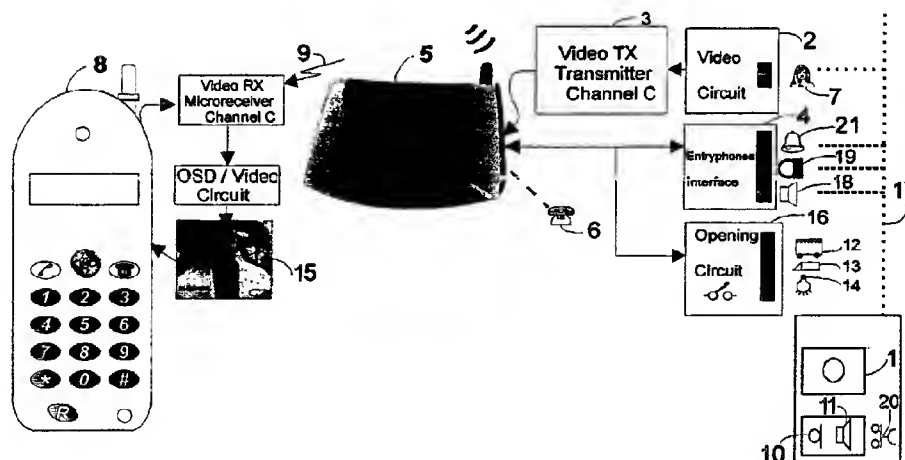
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[Continued on next page]

(54) Title: **PORTABLE VIDEOINTERCOM SET**



(57) Abstract: The basic idea of the invention is to transmit the video information coming from the telecamera 1 of an external video entryphone to the portable unit 8. A cordless video entryphone system includes a complete cordless telephone 5 and 8, which fulfils all the functions of a house mobile telephone. It consists of two units: a base station 5 physically connected to the telephone line 6 and a portable unit 8, which are connected by radio signals. Three circuits are integrated into the base unit: the first processes the video information and transmits it by circuit 3 to portable unit 8, using a third radio channel 9; whereas a second circuit 4 of an entryphone kind, connected to the microphone 19 and loudspeaker 18 allows conversation via the portable unit between the outside and inside or vice versa; the third circuit, operated by the portable unit, controls the mechanisms of the main door 13, the automatic gate 12, the stair lights 14 etc. The video information representing the external image is displayed on the portable unit by a small colour monitor 15, so that it is possible to see the person outside before deciding whether to answer and, if necessary, to operate the opening mechanisms 16 with the keyboard.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PORTABLE VIDEOINTERCOM SET

This invention refers to applications basically of a civil kind in the imaging field for video entryphones, but its application could be extended to the industrial field as required.

At present on the market, in the technical sector, there are entryphone or video entryphone systems which are fixed firmly on the wall or elsewhere and therefore they cannot be moved. These systems allow the users to see and hear only from previously determined place, thus obliging them to go to the video entryphone emplacement in order to communicate with the other person, who thus realizes if the person inside the house is looking or listening.

10 This invention consists of a portable video entryphone, that is a cordless telephone, that integrally fulfils all the functions of a house wireless mobile telephone.

The basic idea of the invention is to transmit the video information coming from the telecamera of an external video entryphone to the portable unit (hand-held telephone).

The video information representing the external image is displayed on the portable unit by means of a small colour monitor (display). Further advantages are:

- a) to see the image of the person calling before answering;
- b) to be able to answer the cordless video entryphone when you are far away from the fixed video entryphone emplacement, for inst. in the garden, on the terrace, in the swimming pool etc.;
- 20 c) to be able to operate the mechanisms of the door, the automatic gate, the stair lights etc. by pushing the right keys on the portable unit.

The invention helps to solve many difficult situations for old or physically disabled people.

A more detailed description of the whole system follows with the relative attached figures:

1) EXTERNAL PLACE (Fig. 1).

25 It comprises:

- a video camera device 1 to produce the video information that represents the image of the external user connected through a cable 17 to the video terminal 7;
- an audio transducer for the external/internal communication through a microphone circuit 10, connected and wired 17 to the loudspeaker 18 of the entryphone interface 4 and from inside 19 towards outside, through an analogous connection 17, that operates the circuit of the loudspeaker 11 for the outside listener;
- a button 20, that generates the audible signal of the entryphone call 21, connected through a cable 17 to the interface 4 of the module.

2) BASE STATION (Fig. 2).

- 10 It consists of a phone circuit 22, an audio circuit 23-24, a radio circuit 25-27 and the CPU 29.

Telephone circuit 22.

- It carries out the de-coupling of the input and output phone signals (telephonic fork), making a connection 6 with the telephone exchange. Furthermore it signals the arrival of a telephone call, the selection and the state of the line;

Modules to be integrated.

- a) "Entryphone interface" module 4: it carries out the coupling between the call signal 21 and the vocal signals 18-19, creating a phonic communication 30 with the base circuit of the cordless phone 5;
 - 20 b) "Opening circuit" module 16: it receives the commands sent by the user from the portable unit 8. These commands can enable other modules to operate the automatic mechanisms, such as the automatic opening of a gate, the turning on of lights etc.;
 - c) "Video circuit" module 2: it receives the video information coming from the telecamera 1 through the apposite cable 17, reaching the connection 7. The video signal is processed 2, so that it can be sent to the next module 3, which carries out the transmission
- 25

of the video signal, thus creating the third radio channel of communication 9 (Channel C) of a visual kind.

Audio circuit 23-24.

The audio compressor/expander 23-24 carries out the reduction (or expansion) of the dynamics of the vocal signal coming from the telephone line, the entryphone or the portable unit without altering its "reconstruction"; this makes its transmission from the radio module easier and, at the same time, it increases the relationship between the signal and the noise.

Radio circuit 25-26-27-28.

10 It consists of a receiver and a transmitter working simultaneously.

The transmitter circuit 25 captures the phonic signal coming from the telephone or the entryphone line and by means of a first radio channel (Channel A) transmits it to the receiver 33 of the portable unit 8, thus allowing listening 34 thanks to the amplifying circuit 32.

15 The receiver circuit 27 processes the vocal signal coming from the microphone 35 of the portable unit and sends it to the audio receiving circuit 24 of the base unit by means of a second radio channel 26 (Channel B).

Both channels follow the same direction thanks to a coupling 26 filter that allows a two-way connection. This is a Full-Duplex Connection.

20 It is necessary to comply with transmission requirements established by the competent authorities in the telecommunications (for example standard CT2).

CPU 29.

This module is the control unit of the system. It processes the input signals and produces the output signals (data and commands) from/to the portable unit and the base unit.

25 In particular:

- a) it generates the signals of busy line;
- b) it generates the signals of numerical selection (Decadic or DTMF);
- c) it selects the radio channel through the PLL control 28 and the identification of the portable unit in order to avoid superimpositions of signals between sets operating at a short distance and to guarantee privacy of communication;
- d) it processes the commands given through the keyboard of the portable unit;
- e) it generates the commands to be sent to the circuits controlling the automatic opening of a gate or the turning on of lights.

Video circuit 2.

- 10 It finds and processes the video information coming from the external telecamera and sends it to the video transmitter 3, which creates a third radio channel (Channel C), used for the transmission of this video signal, suitably modulated and sends it to the micro-receiver 37 of the portable unit 8.

3) PORTABLE UNIT (Fig. 3).

- 15 Video microreceiver 37.

It receives the video signal coming from the transmitter 3 through the ether and sends it to the video circuit 38.

Video circuit 38.

It processes the video signal by constructing the image to be visualized on the display 15.

- 20 Display 15.

It displays the colour image represented in this case by the images of the external telecamera.

Keyboard 39.

- It transduces the commands/data sent from the user in signals which will be sent from the portable unit to the base unit and here processed by the CPU in order to engage the
- 25

5

telephone line or to control a servo-mechanism, if any (Doors, gates, lights etc.)

Buzzer 40.

It informs acoustically of the arrival of a telephone or entryphone call, differentiating the type of call with various sounds.

5 Similar and symmetrical circuits.

Some components of the portable unit 8 are similar and functionally symmetrical with respect to the base unit 5, like:

- Audio circuit 31-32 -

Similar to the above described (page 3) compressor / expander 23 – 24:

- 10 Here, it carries out the reduction (or expansion) of the dynamics of the vocal signal coming from the telephone line, entryphone or base unit, without altering its “reconstruction”; this makes its transmission from the radio module easier and, at the same time, it increases the relationship between the signal and the noise.

- Radio circuit 33-36-41 -

- 15 It is similar to the transmitter circuit 25-26-27

- a) The receiver circuit 33 captures the phonic signal coming from the transmitter 25 of the base unit (transmission through the ether) and sends it to the amplifying receiving audio circuit 32 of the portable unit 8, allowing listening of a telephone or entry phone call thanks to the loudspeaker 34.
- 20 b) The transmitter circuit 36 transmits the vocal signal generated by the transducer 35 and processed by the audio circuit 31 to the receiver 27 of the base unit 5, thus allowing conversation both to the telephone and the entry phone line thanks to circuit 24.

- CPU 43 -

It is similar to the CPU 29: its operation has been already described above (page 3).

25

The presence of a pre-existing fixed entry phone installation makes the application of the cordless video entryphone easier.

The invention is, indeed, planned to be compatible with already installed systems in order to reduce the costs and the realization time of a device offering new functions.

- 5 The application of this device is particularly useful in the civil field, private houses and offices, where the presence of a pre-existing fixed entryphone or video entryphone system reduces time and costs.

It is recommended that the manufacture of these products is carried out by companies specialising in entryphone and telecommunication systems.

CLAIMS

1. The right is claimed to the cordless videointercom for the ends and purposes described above.

5 2. The right is claimed to the cordless videointercom as at point 1 with the video information, represented by the external image displayed on the portable unit by means of a small colour monitor 15, which allows the user to see the person outside before deciding whether or not to answer. So if one wishes to communicate, the entryphone communication is set in motion and then it is possible to utilize the mechanisms 16 through
10 a keyboard;

3. The right is claimed to the cordless videointercom as at point 1 with the characteristic to be fully compatible with the existing systems (entryphones, telephones, electric locks) and pre-existing units.
15

4. The right is claimed to the cordless videointercom as at point 1 in that many services and commands are concentrated in a single device, that is the portable unit 8, thus helping to improve quality of life.

20 5. The right is claimed to the cordless videointercom as at point 1 in that the transmission of the video information coming from the telecamera of an external video entryphone to the portable unit (hand-held telephone) is without cost.

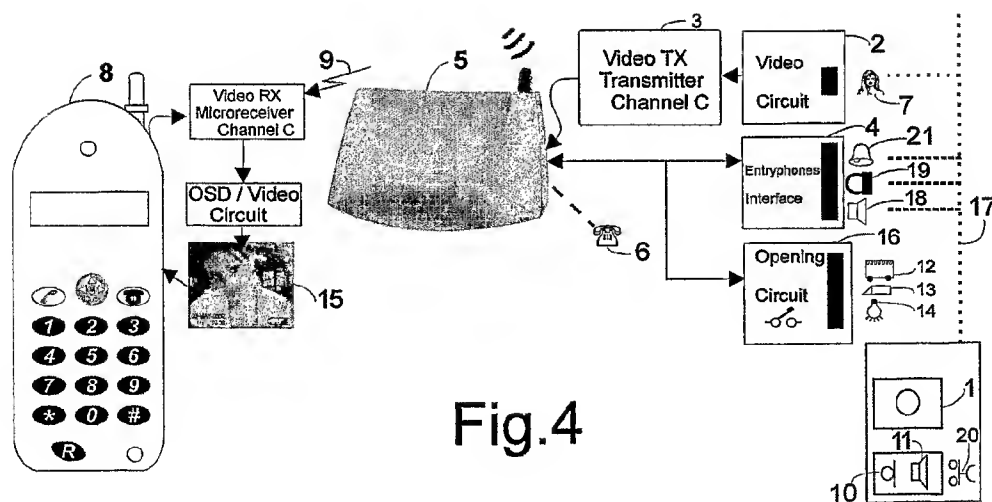
6. The right is claimed to the cordless videointercom as at point 1 in that it
25 combines two functions, that is video entryphone and telephone, in a single apparatus.

7. The right is claimed to the cordless videointercom as at point 1 for the possibility to have both the video entryphone and phone service at one's disposal at a lower cost than that of getting them one at a time.

5 8. The right is claimed to the cordless videointercom as at point 1 in that the colour monitor (display) has the double function of displaying images coming from the telecamera 1 of an external video entryphone and the function menu OSD, which has a wide range of setups.

10 9. The right is claimed to the cordless videointercom as at point 1 to be able to alter the form and uses of the invention without, however, changing its basic principles and intentions as described above, being as it is only an example.

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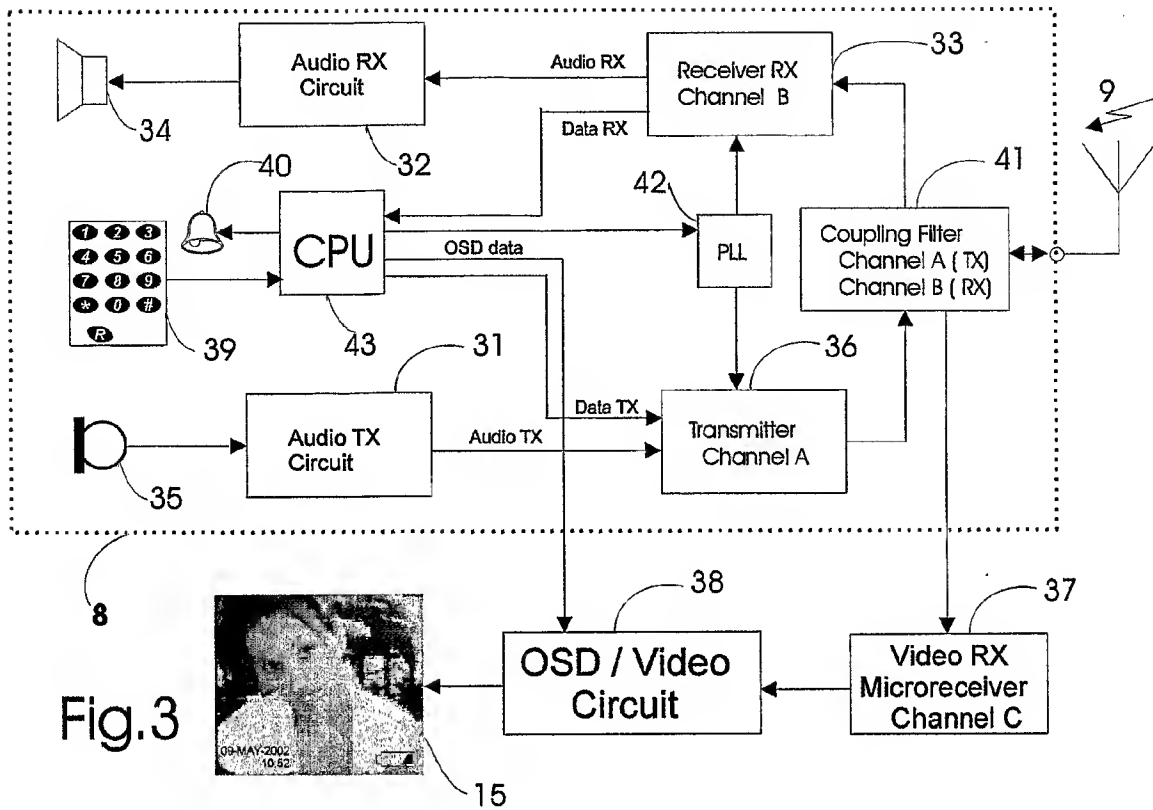


Fig. 3

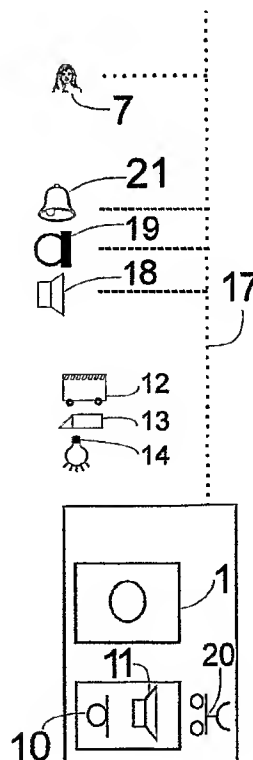


Fig. 1

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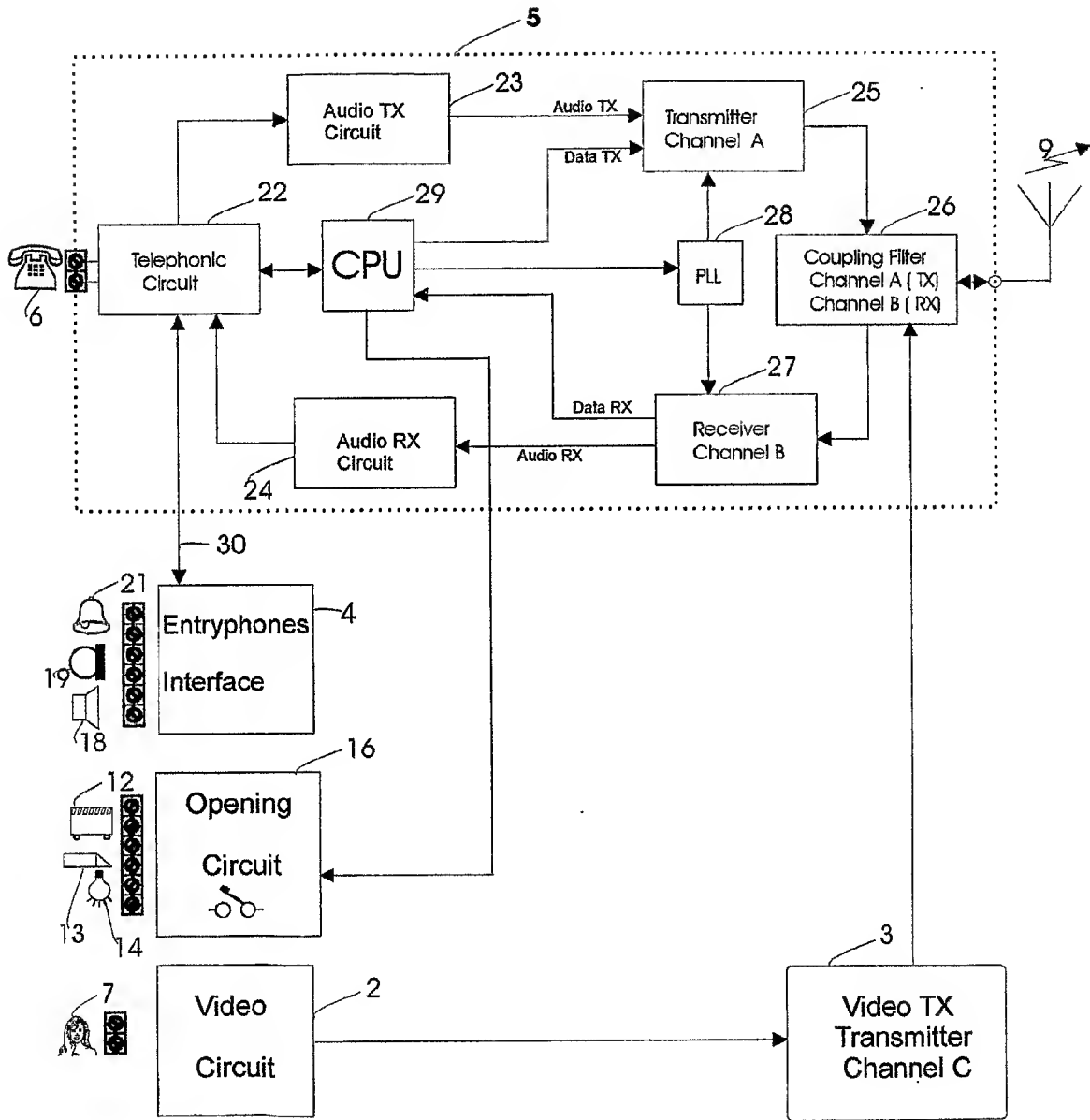


Fig.2

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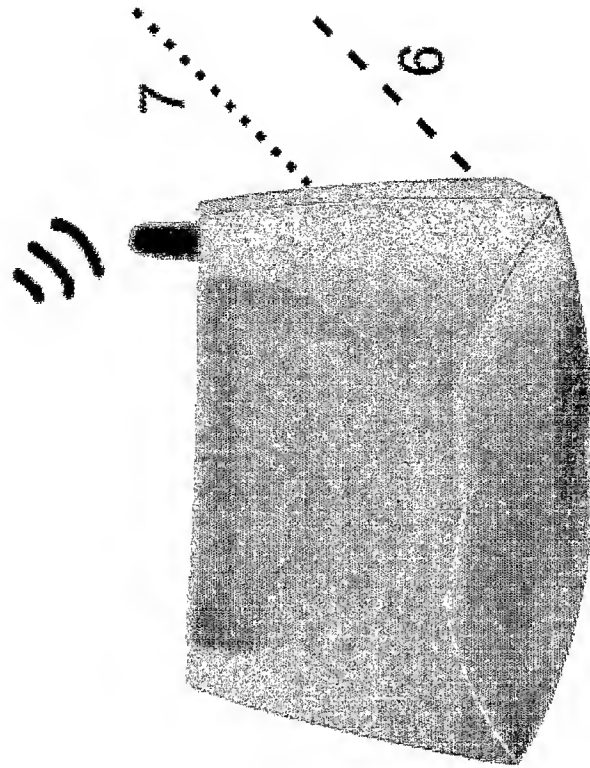
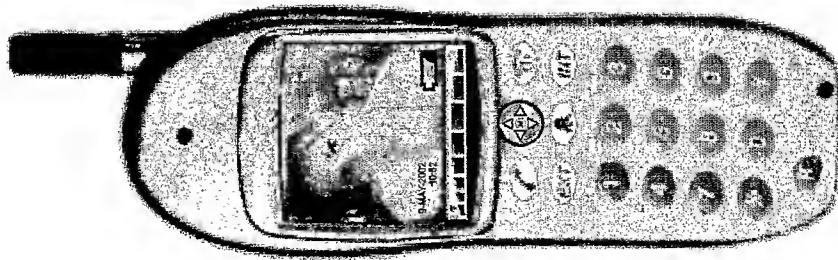


Fig.5



INTERNATIONAL SEARCH REPORT

 Internatl pplication No
 PCT/IT 03/00268

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N7/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 100 39 263 A (GENSWEIN KLAUS) 21 February 2002 (2002-02-21) column 2, line 44 - line 61 column 3, line 35 -column 4, line 14 figure 1	1-6,9
A	DE 42 25 741 A (CHO MYEONG EON) 30 September 1993 (1993-09-30) column 4, line 16 - line 54 figures 1,2	8
A	CA 2 302 258 A (DINATALE SEBASTIAN) 13 September 2001 (2001-09-13)	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

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O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

11 August 2003

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19/08/2003

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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